

CLAIMS

1. A site controller adapted to be used in an automated monitoring system configured for monitoring and controlling a plurality of remote devices via a host computer connected to a first communication network, the site controller configured for controlling communication with the host computer and a plurality of communication devices that define a second communication network associated with the plurality of remote devices, the site controller comprising:

a transceiver configured to communicate with the plurality of communication devices via the second communication network;

a network interface device configured to communicate with the host computer via the first communication network;

logic configured to:

manage communication with each of the plurality of communication devices, via a first communication protocol, based on one or more communication paths for each of the plurality of communication devices, each communication path comprising one or more communication devices involved in the communication link between the transceiver and each of the plurality of communication devices; and

manage communication with the host computer via a second communication protocol.

2. The site controller of claim 1, wherein the logic is software and further comprising a microcontroller for implementing the logic.

3. The site controller of claim 1, wherein each of the plurality of communication devices are wireless communication devices, the plurality of wireless communication devices being disposed throughout a geographic area such that the antenna patterns associated with the plurality of wireless communication device overlap to create a coverage area that defines the second communication network.

4. The site controller of claim 1, wherein the first communication network is a wide area network and the second communication protocol comprises TCP/IP.

1 5. The site controller of claim 1, wherein the first communication protocol
2 comprises a data packet, the data packet comprising:
3 a to address;
4 a from address; and
5 a command number comprising a function code.

1 6. The site controller of claim 1, wherein the network interface device is selected
2 from the group consisting of a dial-up modem, an ISDN card, a DSL modem, and a
3 LAN card.

1 7. The site controller of claim 1, wherein the logic is further configured to
2 determine the one or more communication paths for each of the communication
3 devices by receiving initialization commands from the plurality of communication
4 devices.

1 8. The site controller of claim 1, wherein the logic configured to manage
2 communication with each of the plurality of communication devices comprises one or
3 more look-up tables residing in a memory.

1 9. The site controller of claim 5, wherein the data packet further comprises:
2 a data field;
3 a checksum field;
4 a packet number field;
5 a packet length field;;
6 a packet maximum field; and
7 a message number field.

1 10. The site controller of claim 1, wherein the logic is further configured to receive
2 a first message generated by one of the plurality of communication devices via the
3 second communication network, the first message comprising a first communication
4 device identifier associated with the one of the plurality of communication devices
5 associated with one of the plurality of remote devices that generated the first message
6 and a predetermined function code corresponding to a data signal provided by the one
7 of the plurality of remote devices associated with the one of the plurality of wireless
8 communication devices that generated the message.

1 11. The site controller of claim 10, wherein the logic is further configured to
2 determine, based on the first communication device identifier, the one of the wireless
3 communication devices that generated the first data signal.

1 12. The site controller of claim 11, wherein the logic is further configured to
2 translate the first message into a second message configured for transmission to the
3 host computer via the first communication network.

1 13. The site controller of claim 11, wherein the first message further comprises a
2 second communication identifier associated with an intermediate communication
3 device corresponding to the current communication path through which the first
4 message was received by the transceiver.

1 14. The site controller of claim 13, wherein the logic is further configured to
2 determine, based on the second communication device identifier, the intermediate
3 communication device.

1 15. A method for controlling communication with a host computer connected to a
2 first communication network and a plurality of communication devices that define a
3 second communication network associated with a plurality of remote devices that are
4 to be monitored and controlled by the host computer, the method comprising the steps
5 of:

6 determining a unique address for each of the plurality of communication
7 devices by receiving an initialization message;

8 determining with which of the plurality of communications devices that each of
9 the plurality of communication devices has a communication link;

10 based on the plurality of unique addresses and which of the plurality of
11 communications devices each of the plurality of communication devices has a
12 communication link with, determining one or more communication paths associated
13 with each of the plurality of communication devices;

14 managing communication with each of the plurality of communication devices,
15 via a first communication protocol, based on or more of the communication paths
16 associated with each of the plurality of communication devices; and

17 managing communication with the host computer via a second communication
18 protocol.

1 16. The method of claim 15, wherein each of the plurality of communication
2 devices are wireless communication devices, the plurality of wireless communication
3 devices being disposed throughout a geographic area such that the antenna patterns
4 associated with the plurality of wireless communication devices overlap to create a
5 coverage area that defines the second communication network.

1 17. The method of claim 15, wherein the first communication network is a wide
2 area network and the second communication protocol comprises TCP/IP.

1 18. The method of claim 15, further comprising the step of managing
2 communication with wherein the first communication protocol comprises a data
3 packet, the data packet comprising:
4 a to address;
5 a from address; and
6 a command number comprising a function code.

1 19. The method of claim 18, wherein the data packet further comprises:
2 a data field;
3 a checksum field;
4 a packet number field;
5 a packet length field;;
6 a packet maximum field; and
7 a message number field.

1 20. The method of claim 15, further comprising the steps of:
2 receiving a request, via the first communication network, from the host
3 computer for information related to one of the plurality of remote devices;
4 providing a command message to the second communication network for
5 delivery to the one of the plurality of remote devices based on one of the
6 communication paths associated with the communication device corresponding to the
7 one of the plurality of remote devices.

1 21. The method of claim 21, further comprising the step of receiving a response
2 message, via the second communication network, that is generated by the
3 communication device corresponding to the one of the plurality of remote devices, the
4 response message comprising a first communication device identifier associated with
5 the communication device associated with the one of the plurality of remote devices
6 and a predetermined function code corresponding to a data signal provided by the one
7 of the plurality of remote devices associated with the communication device that
8 generated the response message; and
9 determining, based on the first communication device identifier, the
10 communication device that generated the first data signal.

1 22. The method of claim 21, comprising the step of providing the data signal to the
2 first communication network for delivery to the host computer.

1 23. A site controller for controlling communication with a host computer
2 connected to a first communication network and a plurality of communication devices
3 that define a second communication network associated with a plurality of remote
4 devices that are to be monitored and controlled by the host computer, the site
5 controller comprising:

6 a means for communicating with the plurality of communication devices via the
7 second communication network;

8 a means for communicating with the host computer via the first communication
9 network;

10 a means for managing communication with each of the plurality of
11 communication devices, via a first communication protocol, based on one or more
12 communication paths for each of the plurality of communication devices, each
13 communication path comprising one or more communication devices involved in the
14 communication link between the transceiver and each of the plurality of
15 communication devices; and

16 a means for managing communication with the host computer via a second
17 communication protocol.

1 24. The site controller of claim 23, wherein each of the plurality of communication
2 devices are wireless communication devices, the plurality of wireless communication
3 devices being disposed throughout a geographic area such that the antenna patterns
4 associated with the plurality of wireless communication device overlap to create a
5 coverage area that defines the second communication network.

1 25. The site controller of claim 23, wherein the first communication network is a
2 wide area network and the second communication protocol comprises TCP/IP.

1 26. The site controller of claim 23, wherein the first communication protocol
2 comprises a data packet, the data packet comprising:
3 a means for identifying intended recipients;
4 a means for identifying the sender;
5 a means for indicating a command;
6 a means for data transfer; and
7 a means for indicating potential error.
8 a means for indicating a length of a packet;
9 a means for indicating a total number of packets in a message;
10 a means for identifying a message;
11 a means for alerting the recipients to an incoming packet; and
12 a means for indicating an end of a packet.

1 27. The site controller of claim 23, wherein the means for managing
2 communication with each of the plurality of communication devices further comprises
3 a means for determine the one or more communication paths for each of the
4 communication devices by receiving initialization commands from the plurality of
5 communication devices.